NOVA SCOTIA LIGHT AND POWER COMPANY, LTD.

BRIEF PRESENTED TO THE

ROYAL COMMISSION ON COAL

EXHIBIT 22

NOVA SCOTIA LIGHT AND POWER COMPANY, LIMITED

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January 12, 1960

I N D E X

SUMMARY

1. Nova Scotia has difficulty in competing with the highly developed areas of Quebec and Ontario with respect to the cost of electric energy due to Nova Scotia's natural deficiency in cheap hydro.
2. Nova Scotia competes favourably with electric utilities along the Eastern Seaborad of the United States for all users except primary industry.
3. The cost disadvantage in Nova Scotia for primary users with respect to the Atlantic Seaboard of the United States is due to higher fuel costs in Nova Scotia for Thermal Generation.
4. Very long term trends do not necessarily indicate that present types of Thermal Plant will be the only source for future generation.
5. The Saint John River, the Hamilton River in Labrador, Atomic Power, Tidal Power and new concepts of thermal generation may supplant the present type of thermal plant as the sources of future generation.
6. The development of economic natural resources for power generation, should not be postponed because of conditions existing in the coal industry.
7. Utilities must be free to design plant and to produce electric energy from the cheapest source.
8. Nova Scotia Light and Power Company, Limited presently uses the equivalent of approximately 184,000 tons of coal per year. This could increase to 678,000 tons by 1969.
9. The present use of coal in Thermal Plants in Nova Scotia is approximately nine per cent of the coal produced in this Province.
10. The coal purchases of the utility industry are not sufficient to provide a cure for the market requirements of the Nova Scotia Coal Industry.

11. Coal costs approximately 20 per cent more than residual oils at the present time.

12. In designing a new 100,000 K.W. Thermal Station for installation at Tufts Cove, cost analysis indicates a saving in fuel cost of almost $800,000 a year if oil is used as a fuel instead of coal.

13. In designing a 100,000 K.W. Thermal Plant at Tufts Cove, a capital saving of $1,550,000 would be realized if the plant is installed with oil as a fuel instead of coal.

14. American medium grade coal can be landed at Halifax for approximately the same cost as residual oils and considerably less than Nova Scotia coal.

15. Subventions are being paid to equalize the cost of Nova Scotia coal with American coal in the Quebec area. These subventions are not paid in Halifax where similar market conditions exist and thus discrimination occurs.

16. Subventions are paid by the Government of Canada on electric energy generated by coal to industrial users in Nova Scotia.

17. In the provincial formula for the distribution of subventions by the Government of Canada, provision is made for a reserve fund. This fund is important. It can be used to assist the development of an industry if thermal power costs in the area are such that it is uneconomical for the industry to locate here.

18. Thermal power plants do not require first quality coal, however they require large quantities of coal of uniform quality, mixtures of small quantities of non-uniform quality create operating problems which reflect on cost.

19. Present methods of marketing coal must be changed if this fuel is to be favourably considered by utilities for thermal power plants.

20. Utilities must demand price adjustment for quality variations with respect to moisture, ash and sulphur content as well as calorific value.

21. Cost of energy produced from a fuel is the true measure of its value to the utility.

22. For proper development of the electric utility industry its tariffs must be designed to be competitive with other fuels for cooking, heat processes, etc. The tariffs of the electric utilities are set by a provincial regulatory body, whereas the prices of other competitive fuels are not so regulated.

23. Industrial consultants employed by Nova Scotia Light and Power Company, Limited have stated that in addition to having the cost of the electric energy attractive to industry, the cost to employees of that industry must also be low in order to make an area competitive in industrial development.

24. Consideration of any fuel policy with respect to electric generation, must recognize the needs of all classes of customers. The competitive position of energy sold to domestic and small power customers with respect to alternative fuels and alternative regions is important.

25. Electric Utilities are unable properly to contribute to the economic development of the area if they are required directly or indirectly to subsidize the coal industry.

26. If because of National Development or regional development the coal industry requires subsidization, then this should be taken care of without upsetting the economy of utility operation. That is, if Utilities are to be encouraged to use coal as a fuel, then it should be made competitive with the cheapest fuel by other agencies.

ECONOMIC ASPECTS OF ELECTRIC POWER GENERATION IN NOVA SCOTIA

Electric energy is essential to the day to day functioning of any region affecting people in all walks of life, in the home and on the farm, in business and in industry. For the proper economic development of a region, electricity must be available for all classes of users at prices that are competitive with other regions. For the home, farm, business and small industry generating costs represent 25 to 30 per cent of the total cost of delivering electricity to the consumer. The cost of the large network of distribution lines, together with service costs makes up the difference. For large industry, however, since it is usually served at transmission level, the generating cost can amount to over 70 per cent of the total cost.

Nova Scotia has always been at a cost disadvantage compared to some areas in Canada in the generation of electric energy. Due to its geographical and topographic features, there are no large watersheds for hydro power generation. Hydro sources within the Province are expected to be completely developed within the next five years. The present position of hydro to thermal generation by utilities within the Province is that, more than 60 per cent of the power requirements is produced from thermal plants. This percentage will increase greatly in the next ten years.

From a competitive standpoint, large industrialized areas have an advantage over smaller areas in the field of thermal generation since thermal power can be generated more cheaply from the larger, high efficiency machines. It is, therefore, essential that Utilities in Nova Scotia design and operate to take advantage of all factors that will bring about the cheapest generation. Normally where thermal generation supplies the greater part of power requirements, Utilities

can best fulfill their obligation in economic development if they are free to use the cheapest fuel available.

However, in Nova Scotia the Federal coal subvention now tends to equalize the effect of fuel cost on electric tariffs for some power customers.

The Company considers that it is essential that proper tariff balances be maintained between all classes of consumers. It is also essential to the growth of the electric utility that electric energy be kept competitive with alternative fuels for cooking, water heating, heat processes, etc.

FUTURE ALTERNATIVE SOURCES OF POWER

It would be incorrect at this time to plan that future sources of power in the Maritimes will be mainly thermal stations burning fossil fuels.

In the short-term outlook The Nova Scotia Power Commission is completing a 25 megawatts hydro development at Sissibou Falls. Nova Scotia Light and Power Company, Limited is building two hydro plants at Alpena and Lequille, Annapolis County, totalling 10 megawatts.

Investigation is being carried out by The Nova Scotia Power Commission of a potential hydro site at Wreck Cove, Cape Breton of approximately 75 megawatts.

The New Brunswick Electric Power Commission are investigating further major developments on the Saint John River.

A thermal power plant of 50 megawatts capacity is being built by The New Brunswick Electric Power Commission at Saint John, for operation in 1961. Nova Scotia Light and Power Company, Limited is designing a 100 megawatt plant for installation at Tufts Cove for operation in 1965 or 1966.

In the long-term outlook, although further thermal extensions will be necessary to integrate efficiently the various sources of energy, there are several additional major sources of power which require consideration. The following are brief comments on these sources:

(1) Hamilton River

British Newfoundland Development Corporation, a Company interested in power development in Canada, has stated to the Power Committee of the Atlantic Provinces Economic Council, that electric energy can be delivered from Hamilton River in Labrador to the Moncton - Amherst area, for 7 mills per kilowatt hour. This price is based upon energy being taken at a minimum of 100 megawatts demand at 100% load factor. It will be several years before loads on the Maritime grid will provide a demand and load factor suitable for the acceptance of this amount of power under these conditions. Until this amount of power becomes a smaller percentage of the total capacity on the Interprovincial Interconnection, service reliability of a single transmission line from Hamilton River would be a problem. However, the prospects of having available such a large quantity of 7 mill power, is pertinent when forecasting coal consumption by thermal plants within the Atlantic Power Pool.

(2) The Saint John River

Potential sites on the Saint John River offer very real possibilities for adding large new generating capacity to the Atlantic Power Pool. These developments have the advantage over tidal power projects in that they can be developed consecutively, and therefore, more in keeping with growth of demand on the Interconnection. Total development of the River is International, the Rankine Rapids section

being in the state of Maine.

On the New Brunswick reach of the River the four potential sites have a potential combined capacity of approximately 800,000 horsepower and the Rankine Rapids development in Maine is rated at 620,000 horsepower. These five plants would produce over a half-billion kilowatt hours per year on a 50% load factor basis. The first of this capacity will, in all probability, be additions to the present Beechwood plant totalling 90,000 horsepower, (the first 30,000 horsepower of which is in prospect for 1962). The next addition will in all probability be at Grand Falls where the new potential is 245,000 horsepower.

(3) Atomic Power

The development of electric power generation from nuclear fuelled stations is considered to-day to depend upon slow methodical progress toward units which will be more commercially competitive with conventional plants burning fossil fuels. There is at present, no indication of a sudden break-through to improve the techniques or processes, which would render nuclear generation significant within the next ten years in the Maritimes. While this may seem contradictory to the very extensive reactor developments which are taking place all over the world, it should be noted that coincident with the development of atomic plants, there have been very appreciable improvements in the conventional steam turbine cycle, which have tended to maintain overall lower costs.

As the system load grows, atomic energy will become more and more competitive and probably within the next ten to fifteen years will be in position to challenge coal and oil as an energy source for future generation.

(4) Tidal Power

Foundation of Canada Engineering Corporation Limited has carried out a study of tides in the Bay of Fundy, and on the basis of findings has stated that power can be developed in the Shepody Basin to the extent of 245 megawatts and capable of producing 3.76 billion kilowatt hours at a price of 6.72 mills per kilowatt hour; the fixed charges being computed with interest at 6.0 per cent. Further investigation is required to prove the economics of this project. Although the estimated load of the Power Pool is not large enough to absorb the units of energy required to render this very large development immediately feasible, it must be considered in long-range planning. It is also pertinent when forecasting coal consumption by thermal plants within the Atlantic Power Pool.

(5) Research on Thermal Plants

Major research continues to be carried out with respect to fossil fuel burning, and if the trend of improvement continues, thermal plants using fossil fuel will maintain their competitive position.

An unusual research programme is being carried out in what is called magnetohydrodynamics. Ten power companies of the United States have joined in this research project, which offers the possibility of a 25 per cent increase in operating efficiency. This group are exploring the feasibility of obtaining electric power from a "hot gas" or megnetohydrodynamic generator. This is but one of the new research programmes on thermal generation.

Further research may also be done with the burning of coal underground.

DESCRIPTION OF COMPANY AND GENERATING FACILITIES

Nova Scotia Light and Power Company, Limited and its wholly-owned subsidiary companies supply electric service in the central, western and northern sections of the Province of Nova Scotia. Its subsidiary companies; Western Nova Scotia Electric Company, Limited, Milton Hydro Electric Company, Limited and The Edison Electric Light and Power Company, Limited of Springhill, supply electric requirements in Barrington and Yarmouth, Brooklyn and Milton, Oxford and Springhill, and neighbouring areas respectively.

The areas served by Nova Scotia Light and Power Company, Limited and its subsidiaries, have a combined total population of more than 300,000. The total number of customers served exceeds 90,000 which is about one-half the electric consumers in the Province.

The Company's generating facilities consist of a modern thermal-electric plant at Halifax, a number of hydro electric generating stations in the Annapolis Valley and a diesel plant in Yarmouth. The total capacity of the generating system is 206,757 kilowatts (name plate rating).

In addition the Company purchases the following approximate amounts of power: From The Nova Scotia Power Commission 7,000 kilowatts at Halifax, 5,000 kilowatts at Yarmouth, 3,000 at Onslow, and 850 at Milton. It also purchases 3,200 kilowatts at Springhill from the Canada Electric Company. Interconnections are maintained at the Western end of the Province with The Nova Scotia Power Commission's Western Network and with Minas Basin Pulp and Power Company, Limited St. Croix System.

In 1958 gross production of electricity totalled 645,714,756 kilowatt hours, compared with a total of 627,073,496 kilowatt hours in 1957. Of this total 366,176,600 kilowatt hours, or 57 per cent of the power requirements of the Company was produced by thermal generation. The 1959 peak load on the Company's integrated system was 133,400 kilowatts.

In keeping with the sustained long-term growth of demand for electric energy, considerable additions have been made to the system's generating, transmission and distribution facilities in recent years. A programme of further development is now in progress. On October 30, 1959 the Company commissioned a 45,000 kilowatt addition to its thermal generating facilities at Water Street. Hydro electric sites will be developed at Lequille and Alpena in the 1962-63 period, to add approximately 10,000 kilowatts to the hydro generating facilities in the Annapolis Valley.

Forward planning also includes the possible installation of a 25,000 - 30,000 kilowatt distillate oil fired gas turbine at the new plant site at Tufts Cove on Halifax Harbour, to be ready for operation in the Fall of 1963. This unit will be for peak load purposes, and its probable annual use will not exceed 600 hours. More definite scheduling of this unit will depend upon the capacity available for purchase from the Interprovincial Interconnection, the possible development of hydro at Wreck Cove by The Nova Scotia Power Commission, and future developments on the Saint John River.

The copy of the Company's load duration curve for the year 1958 as in Appendix "A" is typical of the Interprovincial system load.

The next major addition to generation by this Company will be a new thermal generating station to be erected at Tufts Cove, the first unit to be of 100,000 kilowatt capacity, for operation in 1965-66. This site provides for an ultimate development of 500,000 kilowatts.

EXISTING THERMAL CAPACITY - WATER STREET PLANT

UNIT NO.	MANUFACTURER	CONTINUOUS RATING
2	C. A. Parsons	12,500 KW
3	C. A. Parsons	20,000 KW
4	Metropolitan - Vickers	20,000 KW
5	Metropolitan - Vickers	25,000 KW
6	English Electric	45,000 KW
7	English Electric	45,000 KW

ACTUAL THERMAL GENERATION

The following tabulation shows the gross generation by thermal units for the past ten years, also the equivalent tons of 13,000 B.T.U. (British Thermal Unit) coal assuming that coal was the only fuel used.

YEAR	MILLIONS OF KWH	EQUIVALENT TONS OF COAL USED
1949	100.5	84275
1950	118.8	94219
1951	113.9	78120
1952	165.9	93450
1953	203.1	115194
1954	221.6	120044
1955	306.2	161900
1956	326.2	172300
1957	425.5*	219291
1958	366.1	183339

* Abnormally low water year

PROJECTED THERMAL GENERATION

The following table shows the projected thermal generation for the next ten years, also the equivalent tons of 13,000 B.T.U. coal required to produce this energy, if coal only is used.

YEAR	MILLIONS OF KWH	EQUIVALENT TONS OF COAL USED
1959	420	203,179
1960	556	268,000
1961	628	303,500
1962	688	333,000
1963	776	375,000
1964	852	412,500
1965	958	463,000
1966	1070	509,000
1967	1203	582,000
1968	1344	650,000
1969	1399	678,000

During the year 1958, Nova Scotia Light and Power Company, Limited used as fuel, the equivalent of 183,339 tons of Nova Scotia slack coal in its Water Street thermal plant of which 158,000 tons was Nova Scotia Slack Coal and the remainder Bunker "C" oil. Of the coal used approximately 88,000 tons were purchased from the Dominion Coal Company Limited.

The remainder was supplied by the Evans Coal Company of Inverness, Cape Breton; Doucet & Sons, Inverness, Cape Breton; Bras d'Or Coal Company Limited, Sydney Mines; Indian Cove Coal Company, Sydney Mines, and the Cumberland Fuel & Trading Company of River Hebert.

COAL ANALYSIS

A typical proximate analysis showing the four main characteristics of these coals follows:

	Dominion	Bras d'Or	Doucet	Evans	Cumberland
Mositure	4.11%	4.83	10.81	6.37	2.55
Ash	7.39%	10.30	14.67	10.64	18.25
Sulphur	3.38%	5.9	5.6	5.44	4.46
B.T.U.	13,390	12,310	9,938	11,790	11,670

These typical analysis do not fully indicate the variations in the quality of the coal that have been experienced, as indicated by the following tables:

	Dominion	Bras d'Or	Doucet	Evans	Cumberland
Moisture	3.1	5.77	13.42	10.71	2.93
Ash	3.7	12.82	11.14	10.3	22.5
Sulphur	2.0	5.96	5.5	5.5	4.8
B.T.U.	13,970	11,810	10,330	11,320	10,850
Moisture	5.7	5.91	14.99	8.55	3.96
Ash	15.7	9.58	14.53	10.78	20.95
Sulphur	2.0	5.57	5.49	5.48	4.34
B.T.U.	11,410	12,430	9,520	11,490	11,040

All coal purchased from the Dominion Coal Company Limited since January 1, 1959 costs Nova Scotia Light and Power Company, Limited $11.615/Short Ton plant siding Halifax, or 43.02¢ per million B.T.U.'s. This price includes $2.355/ton railway freight between Sydney and Halifax. In addition, there is a top wharfage charge of 8.8¢ per ton on the first 100,000 tons and 4.4¢ per ton on all excess in any one calendar year.

Coal supplied by the Dominion Coal Company, Limited costs the Nova Scotia Light and Power Company, Limited $11.615/ton (including freight) regardless of quality, except that if the B.T.U. content varies more than 1% plus or minus from the guaranteed B.T.U. of 13,500/lb. (as received basis) then a bonus or penalty is applicable at the prevailing rate of 43.02¢ per million B.T.U. Dominion Coal Company Limited will not agree to a penalty or bonus for moisture, ash or sulphur content of their coal regardless of quality.

For all other suppliers of coal to the Company's plant, none of whom is capable of filling the total requirements, a bonus-penalty method of purchasing is used. This method was developed and used by the Northern Indiana Public Service Company and complete details were given in a paper which was read before the American Society of Mechanical Engineers at their annual meeting in New York in December, 1957. A check of this method, by Company engineers, as it pertained to our Water Street plant, gave results so close to those contained in the release, that it was considered the most equitable method of purchasing coal. This method was adopted for the small suppliers, because the quality of their coal for thermal generation was considerably below that of Dominion Coal Company Limited. This method takes into consideration the four characteristics of coal; i.e., moisture, ash, sulphur and B.T.U. content, which can and do vary over a wide range, and have a very definite effect on the use-ability of the coal. All four characteristics directly affect the net cost of production of electricity. True production cost decreases with increased B.T.U./lb. and increases with increased amounts of moisture, ash and sulphur present in the coal. Unless adjusted by

a bonus-penalty contract, the cost of coal can not be properly made to reflect the increased or decreased costs within the plant resulting from more or less moisture, ash and sulphur, so that the true value of the coal may be obtained.

Such adjustments can be applied as a bonus for better quality coal, or as a penalty for poorer quality coal than the standard guaranteed by the supplier. The whole purpose of this formula is to provide a fair basis to pay for value received.

Dominion Coal Company Limited has refused to sell coal on this basis, and as a result, the Company is forced to buy coal at a fixed price per ton, regardless of quality, except for the one concession referred to previously.

Coal from the smaller suppliers is usually of poorer quality than Dominion Coal, but they have accepted this method in selling their slack coal to the Company. For the penalty - bonus feature, their coal is equated to Dominion Coal.

Apart from the actual cost difference between coals, many difficult operating problems occur unless a relatively consistent grade of coal is supplied to the Company's boilers. These problems are at times so great that they would have more influence on determining coal supply than invoiced price.

A copy of the method of adjusting the cost of the coal supplied monthly by one of the smaller suppliers is attached as appendix "B".

DESCRIPTION OF BOILER PLANT

The steam generating facilities of the Water Street Plant consists of seven boilers having the following capacity ratings:

Year Installed	Pulverized fuel fired boilers with Steam Conditions 615 psig 815°F.		
1944	1	110,000 pounds/hr.	
1951	2	170,000 pounds/hr.	
1953	1	220,000 pounds/hr.	
1955	1	300,000 pounds/hr.	970,000 pounds/hr.
	Cyclone Fired Boilers with Steam Conditions - 925 psig, 915°F.		
1957	1	450,000 pounds/hr.	
1959	1	450,000 pounds/hr.	900,000 pounds/hr.
Combined capacity of 7 boilers			1,870,000 pounds/hr.

The combination of these boilers, designed for two distinctive methods of firing, will successfully burn almost any of the Nova Scotia coals. However, inconsistencies in the coal supplied can lead to abnormal operating conditions, resulting in conveying, crushing and pulverizing difficulties, boiler slagging, corrosion, plugging of air heaters and excessive carry-over of dust particles, and smoke which add to air pollution problems.

Nova Scotia coal is relatively high in volatile matter, and has low ash softening temperatures and other characteristics which make it well suited for cyclone firing. However, for pulverized fuel firing, although the coal is high in volatile matter and burns with a short stable flame, it requires a large furnace design to prevent an excessive build up of slag in the lower part of the furnace, and on the boiler tubes.

With the completion of the installation of two cyclone type boilers in the Water Street plant and their correspondingly greater output of K.W.H., the consistency of the quality of the coal is of increasing importance. In these boilers, the ash is reduced to a

molten state, and tapped off into a vat of water where it solidifies and fractures. These furnaces will operate satisfactorily with coal which has the fusion point of the ash below 2250 - 2300°F. The average fusion point of the ash in Cape Breton coals is normally around 1900 - 2000°F. which is well below that required for satisfactory operation in these furnaces. If the ash fusion temperature rises above these values, then the ash does not melt and the furnaces do not operate satisfactorily. Coals with ash fusion temperature around 2500°F have been delivered and operating problems have occurred. Tracing back to the source we found that the ash content of the coal fines from this mine was attributed to the way in which the mechanical miner was used. During the course of its cutting operation it apparently was scraping the pavement of the coal seam. As there seemed to be no way of eliminating this rock from the dry fines being supplied to the Water Street plant it was necessary to discontinue purchasing coal from this particular mine.

The projected thermal generation during the next ten years calls for steadily rising fuel consumption and in 1969 would reach 678,000 tons annually, and the Company is concerned with the cost of producing electric energy with this type of fuel both as to present cost and the future rising cost.

COMPARATIVE COST: NOVA SCOTIA COAL, AMERICAN COAL, AND BUNKER "C" OIL

American coal of 11,000 to 12,000 B.T.U. content, a quality suitable for burning in company boilers, is delivered to thermal plants in the Pennsylvania area for costs ranging from 11.7¢ to 30.0¢ per million B.T.U. for this quality coal.

Ocean freight on bulk shipments has been quoted to this Company as costing between $1.50 and $1.60 per ton on empty bottoms returning to Halifax. This same fuel could, therefore, be landed in Halifax at a price range of 19.6¢ to 36.8¢ per million B.T.U.'s.

Exhibit (1) "Steam - Electric Plant Factors 1958" an annual study by the Department of Coal Economics tabulates the cost of all classes of fuel at thermal generating stations throughout the U.S.A. Further, the Company has received a quotation of 36.5¢ per million B.T.U., f.o.b. Halifax for high quality Pennsylvania coal.

In 1958 the actual net savings to the Company were investigated on the basis of using only Bunker "C" oil as a fuel in both the pulverized fuel plant and in the cyclone type boilers. Based on the investigation, a comparison of the cost of coal vs. oil in the pulverized fuel plant and the cyclone fired boiler the result is as follows: (In making these comparisons invoice costs in both cases were weighted to include costs of handling and processing).

	PULVERIZED BOILERS	CYCLONE BOILERS
Coal	44.42	43.67
Oil	37.55	36.85
Saving using oil as fuel per million B.T.U.'s	6.87¢	6.82¢

Using 1959 prices for coal and oil but retaining the same quantities as used in the 1958 study the comparison in saving would be as follows:

Coal	45.04	44.29
Oil	36.67	35.97
Saving using oil as fuel per million B.T.U.'s	8.37¢	8.32¢

Copies of the sheets showing the method of arriving at these figures are attached as Appendix "C".

These figures compare only the relative differences in cost of purchasing, handling and preparation of the alternative fuels including the cost of ash disposal. Other factors have a direct bearing on final fuel cost but have not been taken into account in the foregoing comparison. These include boiler room labour, cost of ash collectors and ash removal, cost of equipment for coal handling and crushing, cost of maintenance of all this equipment. The cost of land for storage is less for oil than for coal. In addition, the use of oil permits greater flexibility of operation. Therefore, comparitive costs of fuels is determined finally by a common denominator "the cost per unit of developed energy". All of these items must be carefully considered in the design of new plant.

Due to land restrictions at Water Street site there is not sufficient room for storage of coal supplies to protect plant reliability of service for more than eight days' operation. The main fuel storage to protect plant reliability is in Bunker "C" oil tanks. Because of the smaller bulk per heat unit of oil a larger storage can be maintained on the same land area. Because a residual oil is used, certain quantities must be burned so that the oil handling and burning equipment can be kept ready for immediate use.

Bunker "C" oil used in the plant is supplied from the Imperial Oil refinery across the harbour. It is pumped into the two oil storage tanks of 18,000 and 12,000 barrel capacity and flows from these tanks by gravity feed to the boiler oil pumps.

The present day cost of Bunker "C" fuel oil at the Company's Halifax wharf is $2.2485 per barrel of 34.97 imperial gallons. The B.T.U. content of this oil averages 18,400 B.T.U./lb. On this basis one pound of oil has the same number of heat units as 1.36 pounds of Dominion coal. On a tonnage basis the present day cost of Bunker "C" oil is equivalent to coal supplied at the plant for $9.50/ton instead of $11.70/ton.

This amounts to a direct saving of $2.20 for each equivalent ton of Dominion coal used and on the basis of the 1958 usage would amount to $325,000. Should present costs of oil and coal remain stable, the saving in 1969 could be $1,500,000. This is increment cost only and does not take into account the cost of personnel to handle the fuel, the maintenance and operation of the coal equipment and ash disposal, and the other items previously mentioned.

If, in the Halifax area, the present prices of Bunker "C", or higher viscosity oil pitch, remains below that of coal the use of these oil fuels would decrease the production costs of electricity about 1 to 1.4 mills per kilowatt hour, or between 15 - 20 per cent. This effect on production costs is shown by a recent survey of thermal generating stations in the United States. This survey found that fuel costs averaged 42% of the total cost of energy produced by the individual steam stations which reported. On this basis alone, a very substantial saving could be realized by installing the first boiler unit at Tufts Cove for oil firing.

The capital cost of the boiler plant for the first proposed unit at Tufts Cove designed and equipped for coal firing will be $3,900,000. If this boiler is designed and equipped for

oil firing it will cost $2,350,000. Of this amount $800,000 is in boiler and $750,000 in coal and ash handling equipment.

The 11th Steam Station Cost Survey, as published in the October, 1959 issue of Electrical World, shows an average station cost of $115 per KW for oil and/or gas fired stations in the 100-150 megawatt range. The cost for coal fired stations is $155 per KW. These costs are typical of other recent similar surveys. Boiler equipment for oil or gas fired plants uses 36.4% of the plant construction dollars while coal fired plants use 40.6%. These statistics show that, on the average, a lower capital investment is required for the oil fired station.

Coals vary greatly in their B.T.U. value, sulphur content, ash content and in the fusion temperature of the ash. These four factors are the main determinants in the design of a coal burning boiler.

The heating value or B.T.U. content of a coal affects the design of boiler plant in the sizing of the coal handling equipment as well as in the amount of heat absorbing surface required in the furnace. The sulphur content affects the design mainly by governing the minimum exit gas temperature leaving the unit which, in turn, directly affects efficiency. High sulphur content increases the rate of fouling of the gas passages resulting in higher cleaning costs. Ash content affects the design of the boiler furnace and gas passes in respect to their sizing. It also affects hoppers, ash collecting and removal equipment. Fusion temperature of the ash affects the design in that the heat input to the furnace and the absorption of furnace walls must be so proportioned that combustion is completed before the

gases leave the furnace, and the gas temperature must always be sufficiently below the fusion point of the ash to prevent clogging.

COAL SUBVENTIONS

By virtue of the Atlantic Provinces Power Development Act, the Minister of Northern Affairs and National Resources was authorized, with the approval of the Governor-in-Council, on behalf of the Government of Canada, to enter into an agreement with the Government of any of the Atlantic Provinces to provide assistance to the Province in the generation of electric energy as provided by said Act.

In an agreement, effective for five years from December 1, 1957, made with the Province of Nova Scotia, the Dominion Coal Board, on behalf of the Government of Canada, pays to the Government of Nova Scotia, a subvention of 7.43 cents per million B.T.U.'s on coal used for the generation of electricity in Nova Scotia.

From the money received the Province of Nova Scotia pays subventions to certain power consumers of all Utilities who generate in thermal plants. The amount of subvention is based on the amount of thermal generation from coal by the supplying utility, as well as the cost of coal to the particular supply utility.

The subventions to tend to equalize the affect of fuel cost on the electric tariffs for those power customers who receive subventions.

Appendix "D" contains a description of the distribution of coal subventions in Nova Scotia, method of apportionment and classification of industrial customers entitled to receive this subvention, all as prepared by The Nova Scotia Power Commission.

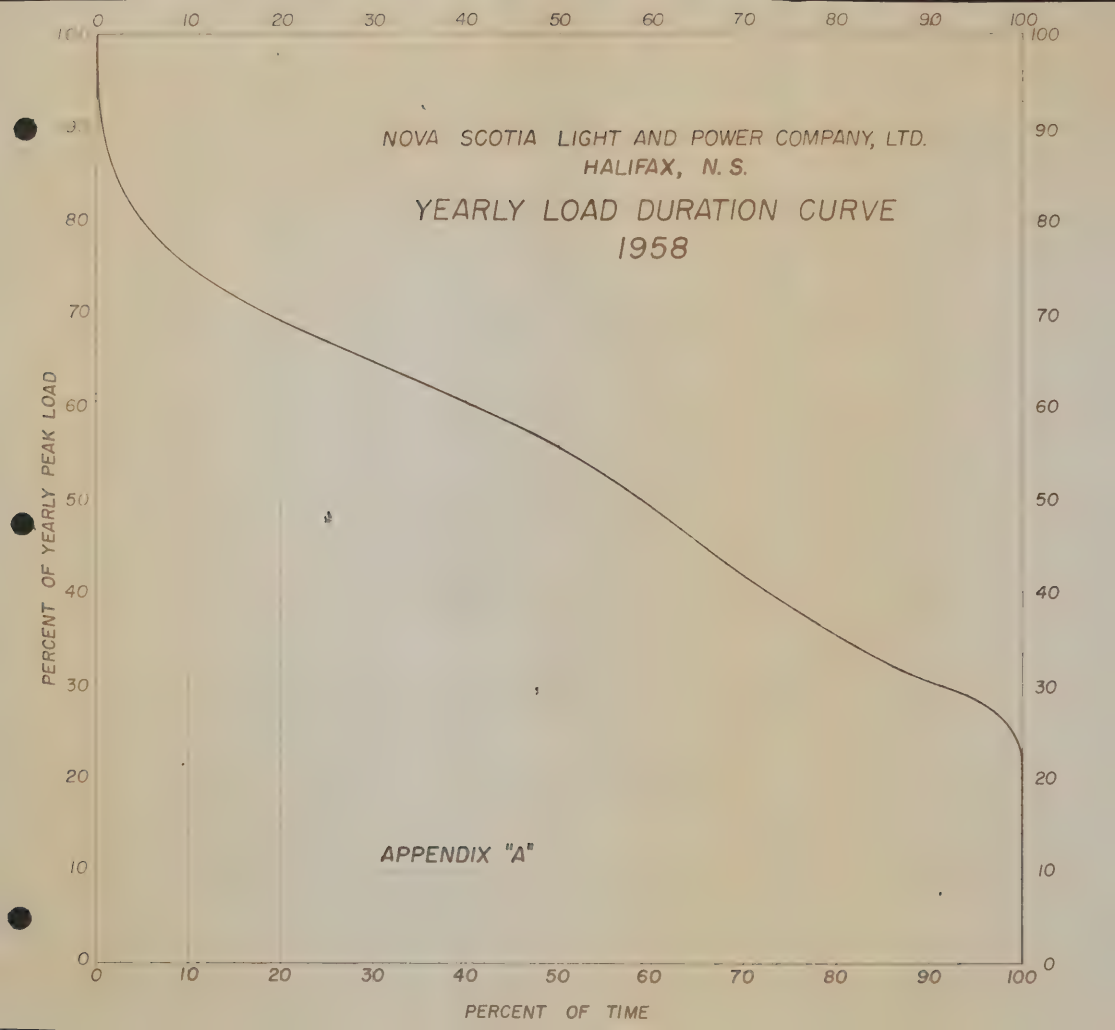
In addition to the amounts paid directly to power customers, a portion of the Federal subvention payments is set aside in a reserve fund to further subsidize present or future industries of a type where cost of power represents a significant percentage of finished product cost. The Company considers this reserve fund as most important because it could provide the means to attract new industries to Nova Scotia.

No subvention is paid to domestic or commercial users. No subvention is paid to the generating utility. Therefore, the subventions do not in any way reduce electric tariffs to all consumers, nor do they alter the position of the generating utility which finds that oil is the cheaper fuel for its general operations.

Exhibit 2 is submitted which is a tabulation prepared by the Edison Electric Institute showing electric energy costs as a percentage of production costs for various industries. This tabulation will show that for most industries electricity represents less than one per cent of production cost. Industries that really need particular help in making electricity competitive compared to other regions are those in which electricity represents more than three per cent of their production costs.

The payment of Federal subventions to Nova Scotia is a direct benefit to the economy of the Province.

In Nova Scotia the distribution of the subventions to power users is proceeding in an orderly fashion. The formula now being used to determine the amount of subvention to power users in Nova Scotia is one that can be readily altered to meet either the changes in policy that may come with additional experience or the requirements of changing conditions.


NOVA SCOTIA LIGHT AND POWER COMPANY, LTD.
HALIFAX, N. S.
YEARLY LOAD DURATION CURVE
1958
APPENDIX "A"
PERCENT OF YEARLY PEAK LOAD
PERCENT OF TIME
0
10
20
30
40
50
60
70
80
90
100

APPENDIX "B"

NOVA SCOTIA LIGHT AND POWER COMPANY, LIMITED

COAL ADJUSTMENT CALCULATION

Month of November, 1959

S. J. Doucet & Sons Ltd.,
Inverness,
N. S.

	Guarantee Analysis Dominion	As Received Analysis	Difference Per Cent	Adjustment B.T.U. per 1% Note - (a)	Adjustment Amount in B.T.U.'s Note - (b)
Moisture	3.5	14.99	11.49	60	689
Ash	8.5	14.53	6.03	80	482
Sulphur	3.5	5.49	1.99	100	199
B.T.U.	13,500	9,520			

Delivered Price, Guarantee Analysis:
$43.02 cents per Million B.T.U.'s

As Received B.T.U.	9,520
Adjustment B.T.U.	1,370
Adjusted B.T.U.	8,150

Invoiced Price,	F.O.B. Shipping Point	4.97
Freight		2.355
Delivered Price,		7.325
Adjusted Price,	(8150 x 2000 x 43.02)	7.012
	Difference	.313

Tons Received, 699.98 tons
Adjustment 699.98 x .313 = $219.09 penalty

NOTE:

(a) If difference is less than 0.5% for any one factor, adjustment will be zero.

(b) If net difference from quaranteed analysis is less than 100 B.T.U.'s adjustment will be zero.

APPENDIX "C"

To calculate the Unit Cost of unloading, crushing and conveying coal from railway cars to Bunkers. This includes the cost of labour, power and lighting.

In arriving at this figure the 12 months September 1957 to September 1958 were used.

The total equivalent tons of coal handled = 195,510 tons

The cost of labour for handling (8 men)	$ 25,260 00
Estimated cost of replacement parts of crusher and for lubricants and miscellaneous expenses	2 000 00
Cost of power for handling 368,420 KWH at .7	2 580 00
Lighting conveying plant	500 00
Total charges	$ 30,340 00

Cost per million B.T.U.'s of fuel used based on average Dominion Coal @ 13,120 B.T.U. per lb as received (5,103,000 per million B.T.U.'s for the year)..... .59¢

Pulverizing Cost

Assumed an average of 26 KWH per ton based on B. & W.'s performance figures and spot check on #3A Boiler by Nova Scotia Light and Power Company, Limited

Cost of pulverizing per million B.T.U.'s ..... .73¢

Ash Handling Cost

Cost of labour for ash handling and disposal on basis of eliminating use of one auxiliary attendant per shift

$275.00 per mo. x 12 x 3 = $9 900.00

Cost per ton for this labour 5¢ per ton

Labour cost per million B.T.U.'s ..... .2¢

Cost of hauling ash on basis of actual total trucking cost for the 12 months

Sydney Coal 173,030 tons

4,540,000 million B.T.U.'s

Total trucking cost $18,636.80

Cost of ash removal per million B.T.U.'s ..... .4¢

Power for ash conveyors

Roots Blower, Unloaders, etc. ..... .1¢

Total ash handling cost per million B.T.U.'s .7¢

Cost of Burning Pulverized Coal

	1958 Base Prices	1959 Base Prices
Base purchase price of coal per million B.T.U.'s	42.40¢	43.02¢
Cost of power and labour for handling	.59	.59
Cost of pulverizing	.73	.73
Cost of ash handling and disposal	.70	.70
Total cost of burning pulverized coal per million B.T.U.'s	44.42¢	45.04¢

Cost of Burning Coal in Cyclones

Base purchase price per million B.T.U.'s	42.40¢	43.02¢
Cost of power and labour handling	.585	.585
Cost of power for slag removal, pumping water, drag feeders	.085	.085
Cost of removal from boiler and hauling ash away ..	.6	.6
Total cost of burning coal in cyclones per million B.T.U.'s	43.67¢	44.29¢

Base Price of Oil (Bunker "C")

	1958	1959
Base price of oil per barrel	$ 2.304	$ 2.2485
Taking value of 18,400 B.T.U. per lb		
S.G. .98 gallons per barrel 34.97		
Base price of oil per million B.T.U.'s	36.54¢	35.66¢

Cost of Burning Oil in Pulverized Boilers

Base price of oil per million B.T.U.'s	36.54	35.66
B. & W.'s figure for atomizing steam is given as .7% of steam output, this figure is indicated by measurements taken during actual operation as being about 1% in lbs per hour of steam at 150 psig, 450°F. This 1% is equivalent to approximately .9% of 600 psig, 800°F steam	.7	.7
Tank and line heating and steam tracing based on an approximate measured quantity taken on Oct. 22 and adjusted to average yearly figure	.1	.1
For heating oil at pumps, calculated on heat exchange at pumps	.2	.2
Power for pumping oil based on actual measurements taken on Oct. 22, 2 pumps running to supply #3A, 3B and 6 boilers, 13 KW for 620,000 lbs steam per hour charging energy at 7 mills per KWH	.012	.012
Total cost of burning oil in pulverized boilers per million B.T.U.'s	37.55¢	36.67¢

Cost of Burning Oil in Cyclone Boilers

	1958	1959
Base price of oil per million B.T.U.'s	36.54¢	35.66¢
Tank and Line Heating per million B.T.U.'s	.1	.1
Heating oil at pumps per million B.T.U.'s	.2	.2
Power for pumping oil per million B.T.U.'s	.01	.01
Cost of burning oil in Cyclone Boilers per million B.T.U.'s	36.85¢	35.97¢

Comparison of oil vs. coal (1958 Base Prices)

	Pulverized Boilers	Cyclone Boilers
Coal	44.42	43.67
Oil	37.55	36.85
Difference per million B.T.U.'s	6.87¢	6.82¢

Using 1959 prices for coal and oil but retaining the same quantities as used in the 1958 study, the comparison in saving would be as follows:

	Pulverized Boilers	Cyclone Boilers
Coal	45.04	44.29
Oil	36.67	35.97
Difference per million B.T.U.'s	8.37¢	8.32¢

APPENDIX "D"

DISTRIBUTION OF COAL SUBVENTION - NOVA SCOTIA

DEFINITIONS

"Commission" - The "Commission" means the Nova Scotia Power Commission.

"Board" - The "Board" means the Dominion Coal Board.

"Head Agreement" - The "Head Agreement" means the Agreement dated February 20, 1958 between the Government of Canada, and the Government of the Province of Nova Scotia.

"Coal Agreement" - The "Coal Agreement" means the Agreement effective December 1, 1957 between the Dominion Coal Board and the Nova Scotia Power Commission.

WHEREAS by virtue of the Atlantic Provinces [illegible] Act, the Minister of Northern Affairs and National Resources, was authorized, with the approval of the Governor-in-Council on behalf of the Government of Canada, to enter into an agreement with the Government of any of the Atlantic Provinces to provide assistance to that Province in the generation of electric power as provided in the said Act.

AND WHEREAS pursuant to said Act, the Head Agreement was executed between the Government of Canada and the Government of Nova Scotia, dated the 20th day of February A.D. 1958 whereby the Government of Nova Scotia under Section 2 agreed:-

(a) To confer upon the Nova Scotia Power Commission such powers and authority as it will require which it does not already have to enable it to carry out the agreements hereinafter described,

(b) To determine the basis of the distribution and distribute the subvention paid from time to time by Canada among consumers of eastern coal in thermal electric power plants in the Province;

(c) To take such action as may be necessary to ensure that the monies paid to the consumers of eastern coal in thermal electric power plants in the Province of Nova Scotia are taken into consideration in the setting of the rates charged by them from time to time for electric power supplied to industry in accordance with the purposes of this agreement and further to ensure that it will be fairly distributed, it being understood that the primary purpose of

the coal subvention is to reduce the price of power where it will make the greatest possible contribution to economic growth;

AND WHEREAS under the terms of the said Atlantic Province Power Development Act, the Board shall, on behalf of the Government of Canada, administer any agreement made under the Act to such extent as may be directed by the Minister of Northern Affairs and National Resources.

AND WHEREAS pursuant to Sections 3 & 4 of the Head Agreement, and the Order-in-Council, of the Province of Nova Scotia dated the 23rd day of June A.D. 1958, the Commission and the [illegible] among other things:-

(a) To secure certified monthly statements from each consumer of eastern coal in Nova Scotia, generating electricity for sale, or for their own use, stating the number of British Thermal Units that have been used in the production of electricity, and to transmit a monthly summary to the Board.

(b) To receive the subvention payable, as set out in the monthly statement, and certified by the Board.

(c) To distribute the amounts paid, as provided by paragraphs (b) and (c) of Section 2 of the Head Agreement.

(d) To submit to the Board at the end of each fiscal year a report which shall set out the generating agencies receiving the subvention, the amounts paid, the reduction in cost to each plant or system as a result of the subvention, and the action taken by the Province to reduce rates of power to industry.

It is recommended, therefore, that the following method of distribution of the coal subvention be adopted, on the basis that it is the most equitable to all concerned, and that it falls within the provisions of the Atlantic Provinces Power Development Act, and both Agreements.

INDUSTRIAL PLANTS

The Industrial Plants in Nova Scotia who are consumers of eastern coal used for the generation of electricity [illegible] per million B.T.U.'s between their own coal cost and the cost in Ontario which was in effect at the time the average subvention rate 7.43¢ per million B.T.U.'s was established. Industrial Plants [illegible] generation is consumed by that industry. Where the total generation

[illegible] for industry, the amount of subvention referred to here shall [illegible] only on that portion of the generation which goes to that industry. The remainder of the generation shall be dealt with in the following manner as outlined for Public Utilities.

PUBLIC UTILITIES

Public Utilities in Nova Scotia, who are consumers of eastern coal shall receive a subvention for distribution to their industrial customers on the following formula:-

(a) First Step - A subvention on the same basis as that set out for Industrial Plants in the preceding paragraph, applicable to that portion of the Utilities' generation only, which will be consumed by industrial customers.

(b) Second Step - After the subventions paid to Industrial Generating Plants, the subventions outlined in (a) of this paragraph, and a reserve fund are deducted, the balance of the subvention is distributed among the utility operators in the same ratio as their kilowatt hour sales to industrial customers, bears to the total sales for all utility operators to industrial customers who receive subventions.

And for the purpose of this formula, industrial customers of distributing utilities, shall be deemed to be customers of the generating utility, from which the distributing utility purchases its energy.

Appendix A attached is a sample calculation showing the distribution to Industries and Public Utilities who are producers of coal generated electricity in Nova Scotia. This calculation is based on 1956 energy figures and coal statistics submitted by the operators for the 12 month period ending October 31, 1957. The kwh sales shown include all sales to industrial and commercial power, base sales to Federal Agencies, and to customers of the Nova Scotia Light & Power Co.Ltd. above 100,000 kwh consumption per year who would not be classified as industrial. The customers below 100,000 kwh per annum who would not be classed as industrial are not related. However, since it appears the energy consumption for this group would be small, the effect on the calculations shown would be [illegible]

The reserve referred to in the preceding section shall be maintained at 25% of the total subvention payable [illegible] as a wave stabilizing fund to offset the reduction that any large industry might have on the subvention already paid to existing customers.

DISTRIBUTION TO CUSTOMERS BY THE GENERATING UTILITY

In order to estimate the subvention payable to eligible customers, generating companies will be required to submit to the Nova Scotia Power Commission not later than the end of February in each year their estimated coal consumption in millions of B.T.U.'s for the twelve month period commencing April 1st in that year, as well as estimated kwh sales to industrial customers for the same period. The kwh sales would include sales to industrial customers served indirectly through other distributing utilities.

From the statistics received from all generating companies, the subvention per kwh payable to industrial customers of utilities, and to generating industries for that period can be calculated. In the case of the utilities the subvention may then be applied as a credit to all eligible customers by a reduction in their regular billing. Payment to the industries will be made direct by the Nova Scotia Power Commission on the basis of their kwh generation for any month, following receipt of the total subvention payment for that month from the Dominion Coal Board.

The generating utilities will submit certified claims each month to the Nova Scotia Power Commission for the amounts paid to industrial customers in that month by way of subventions. The utilities will be reimbursed on receipt by the Nova Scotia Power Commission of the total subvention payment for that month from the Dominion Coal Board.

SUBMISSION OF SUBVENTION CLAIMS BY THE NOVA SCOTIA POWER COMMISSION

All generating utilities will be required to submit certified monthly claims to the Nova Scotia Power Commission in the form and manner as set out in the appendices forming part of the agreement with the Dominion Coal Board. Assistance will be given in compiling the first set of these forms. The forms together with a summary are then forwarded to the Dominion Coal Board by the Nova Scotia Power Commission for certification and payment.

CLASSIFICATION OF INDUSTRIAL CONSUMERS

It is recommended that the coal subvention be applied to those industrial consumers of eastern coal generated electricity, who are engaged in the manufacturing, converting or processing of goods and products, from raw or other materials, and who fall within the Power Classifications set out in the rate schedules of the Utilities.

The following are the main groups who are included in the Power Classifications of the Utilities rate schedules, who do not come within the general definitions of industrial consumers, and who therefore would be excluded from subventions.

V APPLICATION OF MINIMUM CONTRACTS (continued)

1. Service Stations and Garages, Tire Retreading & vulcanizing, machine shops.

2. Construction:-

(a) Buildings and structures
(b) Highways, bridges and street construction
(c) Bricklaying
(d) Carpentry work
(e) Concrete and cement work
(f) Electrical work
(g) Lathing, plastering and stucco.
(h) Painting and decorating
(i) Plumbing, heating and air-conditioning
(j) Roofing
(k) Tiling: marble and terrazzo

3. Transportation

(a) Air transport and airports
(b) Bus and Coach transportation
(c) Steam railways, including express and telegraph service.
(d) Urban and suburban transportation systems
(e) Taxi-cabs.
(f) Truck transportation
(g) Water transportation
(h) Services incidental to transportation
(i) Services incidental to water transportation

4. Storage

(a) Grain elevators
(b) Storage and warehousing

5. Communication

(a) Radio broadcasting
(b) Telephone, telegraph
(c) Television broadcasting

6. Public Utility Operation

(a) Electric light and power
(b) Gas manufacturing and distribution
(c) Water and sanitary services

7. Wholesale and retail trade

Government services.

(a) Provincial, federal and municipal operations
(b) Crown corporations
(c) Defense services, installations.

9. Community, recreation, business and personal services.

(a) Education: schools and colleges
(b) Health: hospitals, medical and dental services.
(c) Churches
(d) Welfare institutions, recreational centres, service and social clubs.
(e) Theatres and theatrical services.
(f) Accountancy, advertising, engineering, scientific and legal services.
(g) Insurance, Banks, Trust Companies & Real Estate and Business Offices.
(h) Labour organizations and trade associations
(i) Barbering and hair-dressing
(j) Dyeing, cleaning and pressing
(k) Photography
(l) Hotels, motels and lodging houses.
(m) Laundries.
(n) Restaurants, cafes and taverns
(o) Undertaking
(p) Taverns.

FEDERAL COAL SUBVENTION

FOR REDUCTION OF POWER COSTS TO INDUSTRY

1. This subvention is in the form of assistance from the Federal Government which is designed to equalize the price of coal used for the generation of electric power in the Atlantic Provinces, with that of coal used for electric power generation in Ontario. This money is to be used for the reduction of coal generated power costs to both new and established Industry. Its primary purpose is to reduce the price of coal generated power where it will make the greatest possible contribution to economic growth by reducing power costs and by improving the competitive position of coal used for power purposes. A copy of the Atlantic Provinces Power Development Act is attached.

   The total amount of subvention payable to Nova Scotia in 1958 and 1959 will be approximately 1 million dollars each year. Although this money is to be used for the reduction of coal generated power costs to Industry it should be emphasized that present power costs in Nova Scotia are reasonable and comparable with the Atlantic Seaboard and other areas where thermal generation is the predominant source. This subvention can be considered more in the form of overall assistance so that the Atlantic Provinces will share in industrial development to the same extent as other parts of Canada.

2. This subvention will be paid to industrial consumers of electricity who are engaged in the manufacturing, converting or processing of goods and products, from raw or other materials, and who are consumers of Eastern coal generated electricity. For a list of eligible customers see attachement.

3. This assistance is for a five year period commencing December 1, 1957, and will be at the average rate of 7.43 cents per million B.T.U's or about $1.80 per ton for all Eastern coal used in the generation of electricity. The 7.43 cents per million B.T.U's represents the difference in the average price of coal between the Toronto and Windsor plants of the Ontario Hydro and all coal generating plants in Nova Scotia and New Brunswick for the 12 month period ending November 30, 1957.

4. The Dominion Coal Board will act as the agent of the Federal Government while, The Nova Scotia Power Commission will administer the distribution of the coal subvention for the Government of Nova Scotia.

5. Since the Utilities in Nova Scotia who pay the lowest prices for coal have an advantage over those Utilities who pay higher prices and since the lowest priced operators contributed less to the weighted average used in determining the 7.43 subvention figure, this is recognized to some extent in calculating the distribution. The first step in calculating the distribution for any Utility is based on the difference between that Utility's coal price and the coal price in Ontario. The second step shares, on a straight KWH

basis to Industrial consumers, the residue of the money which has been earned by Domestic, Commercial and other ineligible customers.

6. The distribution principle of pooling and dividing the total reserve earned by ineligible customers assures that the impact of a new large Industry in any Utility's area is not borne entirely by that Utility alone but, to some extent, by all Utilities in the Province.

7. After January 1, 1959, subvention payments will be made to eligible Industrial manufacturing customers in the form of a credit on their regular power billing. A lump sum payment by cheque or credit will be made to all eligible customers for back payments.

8. The subvention payments will effect a reduction in the power bills of eligible customers which will vary throughout the areas served by the different producers of coal generated electricity.

For a typical customer, using the Industrial Power General Rate of The Nova Scotia Power Commission, the reduction would be as follows:-

Hours of Use, or of Operation per Month	Per Cent Reduction in Monthly Bills.
50	7.7
100	11.1
150	13.4
200	15.8
300	19.1
500	23.0
700	25.3

These reductions shown above for a customer of The Nova Scotia Power Commission are about average, and in general it can be said that those Utilities whose generation is entirely from coal will provide larger reductions to their customers, than those whose production is partially from other fuels, or generating sources. As already stated this subvention is only applicable to the areas supplied wholly or partially by coal generated electricity.

For certain types of Industries using very large quantities of power, and with high load factors, the effect of this coal subvention will be much greater than those figures indicated above.

9. Claims will be submitted monthly by the generating Utilities to The Nova Scotia Power Commission for approval and then to Ottawa for payment. The generating Utilities will submit monthly claims to The Nova Scotia Power Commission for repayment of credits allowed to all eligible Industrial customers served either directly or indirectly.

10. There may be modifications from time to time in the distribution policy due to experience and changes in Industrial needs.

Halifax, N. S.
December 3, 1958.

File #904.09 Refs P.

DISTRIBUTION OF FEDERAL COAL SUBVENTION 1958

Total Subvention to Nova Scotia 7.43 X 12,451,629	=	$ 925,184
DISCO share 1.5 X 1,591,029	=	23,865
Sifto Salt share 7.43 X 23,980	=	1,781
DISCO share of Seaboard 123,300,000 X 0.7083		87,333
Available for Distribution		812,205

Coal Generated Industrial Kwh.

Seaboard	15,994,580	= .1403
Canada Electric	25,108,364	= .2202
N.S. Power Commission	25,000,000	= .2193
N.S. Light & Power Co.	47,912,362	= .4202
Total	114,015,306	1.0000

		Industrial Credit	Reserve	Total	Industrial Subvention /Kwh Coal Generated (Mills)	Industrial Subvention Per Kwh (Mills)
15,994,580 X 0.7083	=	11,329	83,512	94,841	5.9296	5.9296
* 25,108,364 X 2.1958	=	55,133	131,071	186,204	7.4160	7.4160
25,000,000 X 1.525/.70	=	54,464	130,535	184,999	7.4000	5.1800
47,912,362 X 0.6722/.542	=	59,411	250,119	309,530	6.4603	3.5015
Total		180,337	595,237	775,574		

Holding remainder of 812,205 - 775,574 = $36,631

* Amount paid to New Brunswick Electric Power Commission for Industrial customers in New Brunswick who consume power generated by the Canada Electric Company -

7.43 x 1,152,560 x 9,642,600 63,983,000 = $12,905.74

Thus Canada Electric Subvention adjusted = $\frac{\$186,204-12,905.74}{25,108,364 - 1,299,000} = 7.2786$ Mills/Kwh

Halifax, N. S.
December 1, 1958

36.02 - 34.76 = 1.26 ≠ .24 = 1.50¢/millions BTU

Subvention then is 1.50 X 1,591,029 = $ 23,865.43

Subsidy/Kwh on all sales = $\frac{23,865,430 \text{ mills}}{119,049,000}$ = .2005 mills/Kwh

SEABOARD

39.20 - 34.76 = 4.44 ≠ .24 = 4.68¢/M. BTU

Total Subvention 4.68 X 4,053,240 = $ 189,691

Subsidy/Kwh in all sales = $\frac{\$189,691}{267,800,000}$ = .7083 mills

CANADA

46.71 - 34.76 = 11.95 ≠ .24 = 12.19¢/million BTU

Total subvention = 12.19 X 1,152,5600 = $ 140,497

Subsidy/Kwh on all sales = $\frac{\$ 140,497}{63,983,000}$ = 2.1958 mills/kwh

N.S. POWER COMMISSION (TRENTON)

48.08 - 34.76 = 13.32 ≠ .24 = 13.56¢/million BTU

Total subvention = 13.56 X 1,520,000 = $ 206,000

Subsidy/Kwh on all sales = $\frac{\$206,000}{135,000,000}$ = 1.525 mills/Kwh

N.S. POWER COMMISSION (INVERNESS)

Total subvention 62,400 million BTU X 7.43 = $ 4,636

This amount included in provincial total and is not specifically allocated.

N.S.L.&P

42.95 - 34.76 = 8.19≠ .24 = 8.43¢/million BTU

Total subvention = 8.43 X 4,040,000 = $ 340,572

Subsidy/Kwh on all sales = $\frac{\$ 340,572}{506,625,000}$ = .6722 mills/Kwh

SIFTO SALT

23,980 million B T U x 7.43 = $ 1,781

This amount to be paid to the Company

Subsidy/Kwh on all sales = $\frac{\$\ 23,865,430}{119,064,000}$ = .2005 mills/Kwh

Subvention then is 1.50 X 1.5921.029 = $ 23,865.43

36.05 - 34.76 = 1.26 ¢ .2% = 1.50¢/million BTU

RD

39.20 - 34.76 = 4.44 ¢ .2% = 4.68¢/M. BTU

Total Subvention 4.68 X 4,053,240 = $ 189,691

Subsidy/Kwh in all sales = $\frac{\$189,691}{267,800,000}$ = .7083 mills

46.71 - 34.76 = 11.95 ¢ .2% = 12.19¢/million BTU

Total subvention = 12.19 X 1,152,500 = $ 140,417

Subsidy/Kwh on all sales = $\frac{\$\ 140,417}{63,983,000}$ = 2.1958 mills/Kwh

POWER COMMISSION (TRENTON)

48.08 - 34.76 = 13.32 ¢ .2% = 13.56¢/million BTU

Total subvention = 13.56 X 1,520,000 = $ 206,000

Subsidy/Kwh on all sales = $\frac{\$206,000}{135,000,000}$ = 1.525 mills/Kwh

POWER COMMISSION (INVERNESS)

Total subvention 62,400 million BTU X 7.43 = $ 463.36

This amount included in provincial total and is not specifically allocated.

42.95 - 34.76 = 8.19¢ .2% = 8.43¢/million BTU

Total subvention = 8.43 X 4,040,000 = $ 340,572

Subsidy/Kwh on all sales = $\frac{\$\ 340,572}{506,625,000}$ = .6722 mills/Kwh

SALT

23,980 million B T U x 7.43 = $ 1,781

This amount to be paid to the Company